Detroit Stoker Company

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May 19, 2003

Mr. Val M. Zolotoochin
Solvay Minerals
3333 Richmond Ave.
Houston, TX 77098

Subject: Solvay Minerals
Green River, WY
Detroit Stoker Company Job No ES-111-RG-969

RE: Results of CFD simulation for water-wall furnace configuration

Dear Mr. Zolotoochin,

Attached please find the results of the Computational Fluid Dynamics (CFD) model for comparison of the original refractory lined furnace to the furnace re-configured with a lower furnace tube and tile configuration. Results indicate that additional air/gas flows would be required do to the additional absorption rates of the tube and tile configuration while still maintaining equivalent excess airs. Given this condition, we are not surprised of the little if any change in outlet NOx value.

The CO value did drop a few ppm, but we would consider this to be insignificant. We would, however, note that the carbon in flyash dropped from 73% to 65%. Detroit Stoker Company's experience would be for the opposite to occur. This is generally related to upward furnace velocities entraining ash/carbon particles. The velocities would increase since the total air/gas increased. Given this observation there may not be the lower deposition rate on the walls indicated by the model.

Regardless of these observations it would appear that there would be little change in performance and possibly better performance by utilizing a water-cooled section. The greatest improvement would be having a better possibility of operating at slightly reduced excess air.

Sincerely,

Robert S. Morrow
Manager-Engineering

CC: William Stuble E-mail only
Dolly Potter E-mail only